

## Commentary Review of new Border Patrol Station at El Paso, TX

Submitted by Frank Bereitschaft, PE, RA, CEM, USGBC, IFMA  
Photos courtesy Frank Bereitschaft and Micheal Baker, U.S. Customs and Border Protection

September 29, 2009

**A**fter receiving notification from Michael Baker, Project Manager with the Customs and Border Protection (CBP) Dallas Facility Center and John Brown, Project Engineer, U.S. Army Corps of Engineers, that a new U.S. Border Patrol “environmentally friendly” facility was being completed in Northwest El Paso, Texas, I requested a tour of the facility. The new 54,000 square foot “green” facility (a.k.a. Station-One), designed to house 350 agents, is the first U.S. Border Patrol Station to be considered for certification under the Leadership in Energy and Environmental Design (LEED) Green Building Rating System, the only rating system endorsed by the U.S. Federal Government. Over time, the energy efficiencies at the new El Paso Station are expected to save taxpayer dollars by lowering operational costs. Expected savings are approximately 25% on annual electric usage by using state-of-the-art energy-saving technologies, such as skylights, occupancy sensor lights, solar panels, reflective roofing, and LED lights.

**I** was granted a tour of the new facility and traveled to El Paso July 7, 2009. I was accompanied by Mr. Richard Tompkins, also with the CBP Real Property Center. Led by Mr. Baker and Jeff Firebaugh (U.S. Army Corps of Engineers), Mr. Tompkins and I toured the new Border Patrol Station the morning of July 8, 2009.



**U**pon arrival at the facility, we noticed the building was esthetically pleasing; the façade and metal roof blending in with the natural color and beauty of the surrounding mountains. In our vehicle, we entered through the rear gate designated for official vehicles. The first building we approached was the Vehicle Wash Bay that utilizes a 100% water recycling system, thus minimizing water consumption. We also saw storm water detention ponds, designed to collect and hold runoff during monsoonal rain events, thus reducing the need for additional storm water infrastructure provided by the municipality. Bike racks were visible at the West Entrance to the building, encouraging the use of alternative transportation. Though we did not experience it, night sky visibility and nocturnal ecosystem activity is improved with the reduction in light pollution through employed downlighting techniques and shielding. All exterior illumination has low light output capability. Two hawk towers were also constructed on site to welcome back any displaced hawks affected by the construction.



**W**e parked in the designated shaded canopy area where the canopies (originally incorporated in the design) were replaced with large photovoltaic arrays. CBP took a funding credit for the canopies as designed and replaced them with photovoltaic arrays that also serve as canopies. It is estimated the photovoltaic arrays will produce enough electricity to supplement approximately 15% of the Station's energy needs through the day lit hours. The photovoltaic array consists of 16 pedestals. Each pedestal has 12 solar modules with a rated capacity of 190 watts each for a total rated system capacity of 36.5 kW. There is one inverter for each pair of pedestals, which converts the DC voltage from the solar modules to 60 Hertz AC.



**W**alking around the building we noticed several native plant species (cacti). The El Paso Border Patrol Station Project Delivery Team, working in tandem with the Cactus Club, employed the services of a local landscaping company to permanently relocate several cactus plants that were temporarily relocated to a staging area prior to the clearing of the construction site.

**E**ntering the building via the designated Sally Port, it was pointed out that the entire port was illuminated with the use of Light Emitting Diode (LED) fixtures.



**T**he LED fixtures consume approximately 56% less energy than the equivalent metal halide fixture normally installed in Sally Ports. The life expectancy of the LED fixtures is 100,000 hours versus 10,000 hours for the metal halide fixtures. The LED fixtures save approximately 10kW, complementing the 56% value.



**T**ogether with the aforementioned photovoltaic arrays, 40kW is saved from the purchase with the local utility provider.

**I**n the process of touring the new facility, we learned that materials and resources were a very important aspect in the construction of Station-One. Considerable efforts were made to assure that construction waste was recycled, diverting it from local landfills.



**M**any of the products used incorporated recycled materials found in the carpet, ceiling tile, gypsum board and toilet partitions. Many materials, such as sky light frames, suspended ceiling systems, gypsum board, glazed wall tile, and doors were purchased locally, thus supporting the local economy and reducing the cost and environmental impact of extended transportation. Indoor air quality was also a key element. Carbon dioxide sensors located throughout the building are monitored by the environmental control system. The control system will adjust the outside air ventilation rates to maintain a differential CO<sub>2</sub> level of 530 Parts per Million (PPM) between indoor air and outdoor air. We also learned the building was properly off-gassed after construction and low volatile compound (VOC) adhesives and paints were used during construction. All the restrooms are equipped with water conserving low-volume faucets, urinals, and toilets.

**I**n keeping with the electric and gas metering compliance sections of the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007, Station-One utilizes a networked central server (Tracer Enterprise Services) that will allow the local facility manager and other CBP personnel (Indianapolis Energy Group, for example) immediate access to the building's environmental control system via the use of a secure PC and web browser.



**A**s we viewed the environmental control system monitor, we were presented with bar graphs depicting gas and electric monthly usage. The system also has the capability of showing previous year usage for the same month and previous month, and, as designed, energy consumption. The system also has the capability of graphically showing real time reporting of each utilities usage during a 24-hour period. From an Operations and Maintenance perspective, the system has the capability of simplifying the process by allowing a single-point access to a virtual complex. Reoccurring problems can be analyzed, set points changed, time schedules modified, and alarms addressed at the local facility management office in El Paso. This will reduce travel time and provide maintenance personnel with insight to potential problems before visiting the site. Station-One has been designed to be 20% more efficient than the energy standards published in ASHRAE Standard 90.1-2004.

In summary, Station-One should be viewed as an icon of exceptional green achievability in the CBP Real Property community. Considering that the project was started more than four years ago, it stands exemplary in the manner in which it was project managed. Flexibility and innovative thinking were keys in the success of this project. The project managers, Michael Baker (CBP) and Jeff Firebaugh (USACOE), supported by the project engineer, John Brown (USACOE), should be commended for their outstanding performance in the design and construction of Station-One. Station-One is in the process of obtaining LEED certification in all five environmental categories (sustainable sites, water efficiency, energy and atmosphere, materials and resources, and environmental quality), plus an additional category for innovation and design. After viewing the facility and site, the project should be able to achieve, at a minimum, a LEED Certified level of certification.